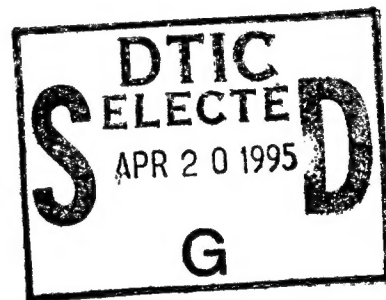


**THE EVOLUTION OF THE
U.S. ARMY INFANTRY SQUAD:
WHERE DO WE GO FROM HERE?**

**DETERMINING THE OPTIMUM INFANTRY
SQUAD ORGANIZATION FOR THE FUTURE**

**A Monograph
by**

**Major Stephen E. Hughes
Infantry**



**School of Advanced Military Studies
United States Army Command and General Staff College
Fort Leavenworth, Kansas**

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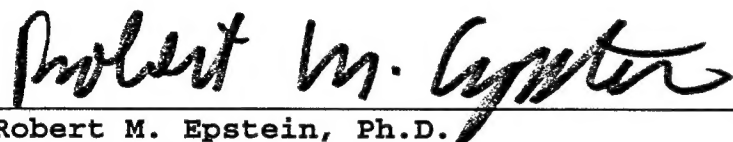
SCHOOL OF ADVANCED MILITARY STUDIES

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Major Stephen E. Hughes

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Optimum Infantry Squad Organization for the
Future

Approved by:


Robert M. Epstein, Ph.D.

Monograph Director


COL Gregory Fontenot, MA, MMAS

Director, School of
Advanced Military
Studies


Philip J. Brookes, Ph.D.

Director, Graduate
Degree Program

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ABSTRACT

THE EVOLUTION OF THE U.S. ARMY INFANTRY SQUAD; WHERE DO WE GO FROM HERE? DETERMINING THE OPTIMUM INFANTRY SQUAD ORGANIZATION FOR THE FUTURE by MAJ Stephen E. Hughes, USA, 48 pages.

An undeniable trend in modern warfare that has influenced how the infantry is organized and how it fights is the increasing dispersion of the battlefield. The primary source of this trend has been the evolution of technology which has resulted in increasingly decentralized operations. This led to the birth of the infantry squad as an independent maneuver element.

This study traces the evolution of the infantry squad in the American Army from WWII until the present. It analyzes the lessons from combat as well as numerous studies and tests that influenced how the Army changed the make-up of the squad, and explain why the squad has its present organization. The study then turns from the past to examine the nature of future conflict and the role of the infantry in it. It examines the newest technologies and how they will likely be incorporated at the infantry squad level.

Finally, the study examines the triangular infantry squad organization proposed by the United States Army Infantry School. The proposal is part of a plan to restructure the infantry force to take it into the next century. The study reveals that the proposed squad organization is not original but has been used successfully by the U.S. Marines as well as the armies of other nations in the recent past. The elements of combat power are used to compare the proposed organization with the present one. The study determines that the triangular squad is superior in all the criteria and should be tested in the field for validation.

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I. Introduction

As our nation approaches the 21st century, the Army faces the daunting task of how to prepare for future conflicts. The changing strategic environment as well as the pressure to reduce the federal budget deficit have strong implications for how the Army will be structured in the future. Recently, the Chief of Staff of the Army, General Sullivan, initiated Force XXI, which is a force design study to address the force requirements for the Army of the early 21st century. He tasked the Infantry Center to study and recommend new structures for the infantry forces of the future. Some highlights of the guidance from this initiative are as follows:

1. Look at all echelons "from foxhole to the industrial base."
2. Organize, equip, and train the force to dominate, control, and win at the least cost in people,
3. Consider more flexible organizations with smaller building blocks, and a more optimum leader to lead ratio. Design units that are more lethal, deployable, sustainable, and effective; not just smaller.¹

The role of the infantry on the battlefield will not change significantly in the foreseeable future. In his article, "The Modern Infantryman," John Weeks lists the "tasks" of infantry as:

First to hold ground against enemy armor and infantry attacks and provide a firm pivot for counterattacks or other maneuvers; second, to dominate and control the close country; third, to close with the enemy and clear his defensive positions; and finally, to provide observation, reconnaissance and early warning.²

The infantry's primary role will remain that of the principal ground combat force. The purpose of close combat is to gain a decision either by actual or threatened destruction of the enemy to achieve his defeat. As proven most recently in Operation Desert Storm, advanced technology provides the means to decimate the enemy's forces and support structure at great ranges and reduced risk. However, the defeat of the enemy still requires close combat.

In designing its force structure of the future, the infantry must start at the bottom and examine its smallest tactical organization, the squad. It will form the basic building block to build the higher units. What is the optimum organization of the infantry squad of the future? Its make-up must be suited to contend with the future battlefield environment. The idea is to organize soldiers, weapons, and equipment in such a manner as to produce the maximum combat power that can be sustained for extended periods of time. FM 100-5 Operations defines combat power as the ability to fight, consisting of the dynamics of maneuver, firepower, protection, and leadership.³ These four elements along with the fifth element of resiliency will provide the criteria to determine the best organization for the future infantry squad.

The experience from previous conflicts together with studies which have been conducted on squads should provide some important lessons to incorporate in designing the future squad. Another important ingredient is the type of weapons and equipment that advanced technology will provide to the squad and how it will

change the way it fights. It will also be important to examine the nature of future conflict and the implications that will have on the infantry.

An undeniable trend in modern warfare that has influenced how the infantry is organized and how it fights is the increasing dispersion of forces on the battlefield. The evolution of technology is the primary source of this trend. In his article, "The Theory of the Empty Battlefield," James Schneider identifies four inventions that occurred in the 19th century which revolutionized warfare. They were the rifled musket, breech-loading rifles, the magazine, and smokeless powder.⁴ Before these inventions took place, the organization of armies had changed little for hundreds of years. Soldiers were positioned in close order formations which were needed to generate the high rate of fire necessary to defeat the opposing force. The tight formations were also needed to maintain control and direction of the troops in battle. The smallest sized units that maneuvered independently were battalions.

The introduction of the rifled musket with its increased range and accuracy exacted a heavy toll of casualties on the densely packed formations. These formations were forced to disperse to be less vulnerable. Next came the breech-loading rifles which enabled soldiers to now load and fire from the prone position. This greatly reduced their vulnerability but made command and control considerably more difficult. The invention of the magazine greatly increased the rate of fire of the individual soldier. Thus, the same number of soldiers could cover a greater frontage with no loss in firepower. The final factor, the invention of

smokeless powder, meant that soldiers and formations became more difficult to locate on the battlefield since they no longer discharged a large signature of smoke from their weapons.⁵ All of these inventions appearing together in a relatively short time favored the defending force who could cover a much larger frontage out to a greater range with fewer troops by dispersing. Attacking forces were forced to disperse to survive which in turn required changes in organization and tactics.

The changes were slow and painful. The dilemma facing armies was how to maintain control of troops who increasingly had to disperse to survive. Close proximity of soldiers was a necessary psychological factor in maintaining unit cohesion in battle. The absence of moral cohesion would quickly render units combat ineffective.⁶ The only solution was to break up formations into smaller groups. However, until the later stages of World War I, armies were still using battalions and companies to form into the lines or waves of larger units to assault entrenched forces. The result was incredible carnage and stalemate. Towards the end of the war, battalions and companies increasingly maneuvered independently, using sub-elements to fix and maneuver. This required more decentralized control and junior officers and noncommissioned officers with the tactical skill to make it work.⁷

The Germans were ahead of the other armies in adjusting their organizations and tactics to accommodate decentralized operations. They pioneered "infiltration tactics" in which they would use small groups of infantry to move along lines of least resistance to penetrate enemy defenses. Special assault

troops (storm troops) spearheaded the attacks that bypassed strong points and advanced boldly by infiltrating small groups into the enemy's rear. Additional follow-up forces would reduce pockets of resistance bypassed by the storm troops and maintain the momentum of the attack. Their basic tactical unit was a group of ten to twelve men which they called a *gruppe*. Here we see the beginnings of the infantry squad as we know it today.⁸

The tactics that the U.S. Army developed in World War I resulted in the platoon becoming the basic tactical unit for fire and movement. The sub-elements of the platoon were called sections which were organized by specialty. Specialization developed as a result of the nature of the trench fighting and the new weapons that were introduced. The first section was the hand bombers; the second section was the rifle grenadiers; the third section was the riflemen; and the fourth section was the auto-riflemen. Squads did exist as administrative units but were submerged tactically within the sections. This organization did not change for almost twenty years until the eve of World War II.⁹

II. The Evolution of the U.S. Infantry Squad Since World War II

During WWII the U.S. Army infantry squad consisted of twelve men organized into three teams. Able team had two riflemen serving as scouts, Baker team had the automatic rifleman with his assistant and an ammunition bearer, and Charlie team had the remaining five riflemen. The squad had one leader and an assistant. The basic weapons were the M1 rifle and the Browning automatic rifle (BAR).¹⁰ In theory, the squad deployed for combat with the scouts out front for

reconnaissance and security under the control of the squad leader. The assistant squad leader directed Baker team, the fire support element, while the squad leader directed Charlie team, the maneuver element. In actual combat, the squad leader rarely used the squad in this manner. The high losses of leaders in combat often resulted in soldiers leading squads with little training and experience in controlling the three teams. Heavy attrition of the squad itself caused constant turmoil in the composition of the teams. When the concept was used, the squad leader often became pinned down with his scouts by enemy fire and unable to control his fire support and maneuver teams.¹¹

The attendees of the 1946 Infantry Conference held at Ft. Benning, Georgia analyzed the experience gained in WWII to see if they needed to reorganize the squad. After careful study they drew several conclusions. The first was that the infantry squad should be defined as the smallest combat element consisting only of as many soldiers as one leader could control. Second, the most soldiers that one leader could control in favorable conditions were eight. Third, a squad of such size could not employ a base of fire element and a separate maneuver element simultaneously. This type of action would require subordinate leaders and thus would violate the definition of a squad. Finally, the squad must anticipate operating at twenty-five percent below authorized strength. Based on these conclusions, the infantry conference recommended to reduce the twelve men squad to nine men and to eliminate the Alpha-Baker-Charlie concept.¹² The Army leadership accepted their recommendation and changed the tables of organization

in 1947.¹³ The squad no longer consisted of separate elements but of a group of soldiers to close with the enemy as a single unit.

The experience of the Korean War brought more changes to the organization of the infantry squad. A report made by Brigadier General S.L.A. Marshall based on interviews with soldiers in Korea greatly influenced these changes. He observed that the compartmented nature of the terrain in Korea led to more sharply defined action than generally occurred in WWII. This more clearly profiled the advantages and disadvantages of the squad organization. Marshall felt that the Army should alter the squad to provide more flexibility and better control. He recommended that the squad be divided into two four-men teams with an automatic rifleman in each team. Marshall observed that the soldiers close to the automatic rifleman tended to fire their rifles more, and when the BAR was being moved, there was a pronounced lull in the fighting.¹⁴

Because the rugged terrain caused the infantry squads to fight more frequently as a separate unit, many units experimented with team organization within the squads. The squads would often split into fire and maneuver elements in the attack. In 1953 a Table of Organization and Equipment (TOE) change authorized a second BAR in each squad. This increased the squad's firepower and enabled it to divide into two balanced fire teams. The trend of team play within the squads gathered momentum afterward.¹⁵

From the end of the Korean War until 1956, the Army conducted numerous studies including three major field exercises to find the right

organization to fight on a nuclear battlefield. In 1956, Psychological Research Associates published a report called A Study of the Infantry Rifle Squad TOE (ASIRS), that provided a detailed analysis of selected factors in determining the optimum squad and incorporated several studies and field tests that had recently taken place. The report stated that there should be one leader for every five men to ensure adequate control. It acknowledged that a unit of this size was too small to produce the combat power necessary for a squad. A more complex command structure was needed in which the smaller units, each with a leader, would be combined into a larger unit with an overall leader. It recommended an eleven-men squad consisting of a squad leader and two team leaders who each controlled four men.¹⁶

ASIRS validated the observations made in the Korean War of the need for sub-elements within the squad that were under the control of their own leader. This was a sharp departure from the findings of the 1946 Infantry Conference that determined that a squad should only consist of as many soldiers as one leader could control. ASIRS also disagreed that one leader could have a reasonable span of control over eight men. The Army had recognized that the modern trend of increasing dispersion on the battlefield had now advanced to the point where infantry squads needed the ability to execute fire and maneuver independently to carry out their missions successfully. ASIRS also noted that the sub-elements of the squad needed to be balanced in size and weapons capability. This gave the squad leader the flexibility to maneuver with either team while the other provided

the fire support necessary to suppress the enemy. Each of the teams had to have enough firepower to serve as the base of fire element and sufficient maneuverability to serve as the maneuver element.¹⁷ Maneuverability for a squad means the ability to move quickly to close with the enemy to destroy or capture him. The balanced nature of these teams made them significantly different from the specialized teams of the WWII squad.

In 1956 the Army adopted the eleven-men infantry squad to replace the nine-men squad. It carried out this change as part of the Reorganization of Current Infantry Division (ROCID), also called the Pentomic Reorganization.¹⁸ The squad consisted of a squad leader and two five-men fire teams, called Alpha team and Bravo team. Each team consisted of a team leader, an automatic rifleman, and three riflemen. There was no longer an assistant squad leader. The basic weapons remained the BAR and the M1 rifle.¹⁹ The BAR gave the fire team the necessary firepower to suppress enemy positions while the other team maneuvered. The four riflemen provided the fire team the ability to move quickly and to close with the enemy to destroy or capture him. In terms of control, the new squad organization had a higher leader-to-men ratio than the old organization, and each team had its own leader. The squad was large enough to absorb two to three casualties which gave it a satisfactory degree of resiliency.

Despite the results of ASIRS and the Korean War experience, there were still many in the infantry community who believed that the conclusions drawn at the 1946 Infantry Conference were still valid. That the conference properly defined

the squad as the smallest combat element consisting only of as many soldiers as one leader could control; and that such a squad could not employ a base of fire element and a separate maneuver element simultaneously. In 1960 the Ranger Department of the Infantry School at Ft. Benning, Georgia conducted a study that concluded that the present eleven-men squad worked so well that it should not be changed. The report warned that:

too many infantrymen accept the idea there is no maneuver within the squad and are willing to settle for small squads operating within the maneuver capability of the platoon.²⁰

There was a danger that the infantry would lose the fire team concept of fire and maneuver.

In 1961 two separate institutions conducted studies on the composition of the infantry squad; one by the U.S. Army Combat Development Experimentation Center (CDEC) at Ft. Ord, California, and the other by the infantry school at Ft. Benning. During this time, the infantry squad had acquired two new weapons, the M14 rifle and the M79 grenade launcher. The Army designed the M14 rifle to replace both the BAR and the M1 rifle. It was lighter than the BAR and the M1, could fire in both automatic and semi-automatic modes, and came with a twenty round magazine as compared to the eight round clip of the M1.²¹ The M79 grenade launcher, with a range between 40 and 400 meters, provided indirect fire over an area that normally could only be covered by rifle and machine gun fire. The Army designed it to cover the area between the minimum range of mortar fire and the maximum distance a soldier could throw a hand grenade.²² At the same time, the

infantry platoons acquired the M60 machine gun, and the Army experimented with the idea of making it a squad weapon.²³

The study done by CDEC, called The Optimum Composition of the Rifle Squad and Platoon (OCRSP), came to similar conclusions to those found in the ASIRS. It stated that the infantry squad should have eleven men organized into two five-men teams, each with an assigned leader. Results of the field testing demonstrated that the squad leader in this type of organization had better control of the unit and was less exposed to enemy fire than squad leaders in squads not configured in fire teams. The results also showed that M60 machine guns assigned to the squad greatly increased its firepower. This arrangement was more effective than if the squad leader had to request machine gun fire support from the platoon. The study recommended that an M60 be assigned to each fire team.²⁴ At twenty-three pounds, the M60 was only a pound heavier than the BAR, but its ammunition was belt fed and required the assistance of another soldier. It had twice the range and rate of fire as the BAR.²⁵ Apparently, the testers did not feel that the M60 adversely affected the squad's maneuverability.

The OCRSP did experiment with squad organizations without fire teams to test the idea that the squad leader would have more flexibility to tailor his squad organization to the situation at hand. In this way, he would not be confined to a rigid pattern of employing fire teams with a fixed composition. He could form his base of fire and maneuver elements from any combination of personnel he desired.

Results of the experiment, however, did not produce any anticipated advantages to this type of structure.²⁶

In the area of sustainment, the OCRSP found the eleven men squad to be clearly better than the smaller squads tested. In all of the missions, from attacking and defending to performing independent missions such as patrolling and flank security, the eleven-men squad was more likely to succeed after sustaining casualties than the smaller squads. The study also noted that the fire teams ceased to exist when the squad was down to seven or eight men.²⁷ Since the 1946 Infantry Conference Report had earlier noted that squads in combat routinely operated at 25 percent below strength, the squad needed to be large enough to withstand the effects of attrition.

The OCRSP also made an important observation about how the squad's size affects its ability to cover a defensive sector. The size of the sector the squad can cover is not entirely dependent on the effectiveness of its weapons. More important is the ability of the soldiers to locate and engage the targets, and this can be limited by the slope of the terrain, vegetation, and man made structures. This means that a smaller squad with improved weapons will not necessarily be able to cover the same amount of area as a larger one with the older weapons. The testers observed that the eleven man squad was better able to cover effectively any assigned sector than a smaller squad, especially in broken and heavily wooded terrain.²⁸ Here we see in a practical way why better technology will not necessarily provide the basis for reducing the size of the units.

The other study that took place in 1961, conducted by the Infantry School at Ft. Benning, was called the Rifle Squad and Platoon Evaluation Program(RSPEP). This study also field tested various types of squad and platoon organizations to find the one that provided the best combination of personnel, weapons, equipment, and tactics. Like the OCRSP, the RSPEP examined squads with and without the fire team organization and also experimented with employing the M60 machine gun as a squad weapon. It reached different conclusions in both of these areas. The researchers determined that the fire team concept lacked flexibility because the teams were already configured. They concluded that the best squad was ten men, without fire teams, led by a squad leader who was assisted by a squad sergeant and a squad corporal. This squad still had the same number of leaders, but without the fire team organization, the squad leader could then determine the composition of the maneuver element and the base of fire element as the situation dictated.²⁹

The RSPEP also determined that the M60 machine gun should not be an organic weapon in the rifle squad. They found that the M60 was too much for one man to service and operate and was most effective when manned with a crew of three. Because of its size, extra equipment, and ammunition, it hindered the maneuverability of the squad. The RSPEP decided that the M60 was better employed in the weapons squad of the rifle platoon where it could be attached to the rifle squad when required.³⁰

The infantry squad designed under ROCID lasted from 1956 until 1963 when it was replaced by the Reorganization Objective Army Division (ROAD). The squad retained the two fire teams configuration but was reduced from eleven personnel to ten. This meant that one of the rifle teams had two riflemen instead of three. While the Army continued to adopt the fire team configuration endorsed by the OCRSP, it apparently rejected its recommendation to provide the M60 machine gun to the squad. Instead, it went with the RSPEP recommendation to place the machine guns in a weapons squad in the rifle platoon. Although the Army nowhere explained why it reduced the squad by one man, one study suggests that it was the result of the greater firepower provided by the new weapons such as the M14 rifle and the M79 grenade launcher.³¹ The introduction of the M113 Armored Personnel Carrier (APC) in mechanized infantry units probably had an influence, because it required a driver that did not count against the squad's authorized strength. Also, between 1961 and 1962, the Army expanded from fourteen divisions to sixteen and had to economize on personnel, trimming units of whatever men could be spared.³²

The Vietnam War provided the fire team based squad with its first combat experience. In 1967, the Army conducted a study that surveyed combat veterans who held the positions of platoon leader, platoon sergeant, or squad leader. It found that seventy-five percent of the participants favored the "squad leader/two fire team leaders concept." It also determined that the squads used the fire teams extensively when they had nine or more men. Below that level, the squads went to

a single element configuration. Attrition was a big factor as squads often averaged only seven men during the war. Eighty-five percent of the veterans wanted the machine gun organic to the squad which was the same conclusion drawn by the OCRSP.³³

From 1966 until 1969, the Army conducted its most exhaustive study ever to determine the optimum infantry squad and platoon for the 1970-75 period. It was officially titled "IRUS," an acronym for Infantry Rifle Unit Study. Its purpose was to carry out a comprehensive and objective evaluation of basic infantry elements and determine the detailed organization of small infantry units. The study drew input from field experimentation, computer simulations, cost analysis, judgmental analysis, surveys, and combat questionnaires. Besides the experimentation with various unit configurations, the study extensively analyzed combat experience from WWII, Korea, and Vietnam.³⁴ To measure the results of the testing objectively, it established criteria that were divided into two groups, benefits and costs. The benefits criteria were fire effectiveness, controllability, maneuverability, survivability, sustainability, and intelligence/counterintelligence. The cost criteria were personnel, material, leadership resources, and training. The objective was to determine the squad with the most benefits at the least cost.³⁵

The IRUS tested numerous squad configurations that varied from seven men to sixteen and varied in organization from no fixed fire teams to three. It came up with two important conclusions. It determined that the infantry squad should contain two balanced fire teams, each with a leader. It also decided that each team

should have one light machine gun and one dual purpose weapon that was a M203 grenade launcher attached to a M16 rifle. The M16 was fielded during the Vietnam War as a replacement for the M14 rifle. During the experiment, the Stoner 63A machine gun was used as a forerunner to the current light machine gun, the M249 SAW.

The IRUS found three squad organizations that performed almost equally well during the field experiments. The thirteen-men squad with two six-men teams, the eleven-men squad with two five-men teams, and the ROADS squad with a five- men team and a four-men team together outperformed the other squad organizations in the test. Of the three, the evaluators slightly favored the ROAD squad as the best overall. However, their familiarity with it since it was the current organization used in the infantry may have contributed to its high subjective ratings. It was questionable that the ROAD squad could out perform a squad that had an additional machine gun and squad member. They failed to articulate any clear criteria that demonstrated its superiority over the other squads.³⁶

The evaluators then further analyzed the squads by the use of computer simulated platoon missions. The platoons organized with the eleven and thirteen men squads thoroughly out performed the ROAD platoon with the ten-men squads as well as the other platoons. Not surprisingly, the platoon with the thirteen-men squads withstood the effects of attrition better than the platoon with the eleven-men squads. But the platoon with the eleven-men squads at full strength was the smallest element that was able to perform consistently well against the postulated

threat in all the evaluation criteria.³⁷ Since the objective was to find the organization that provided the most benefits at the least cost, this clearly favored the eleven-men squad over the thirteen-men squad.

Testing showed that the machine guns were a very important part of the squads in both attack and defense situations. The loss of just one machine gun caused a decrease in the squad's fire effectiveness of twenty percent. The loss of both machine guns caused a decrease of thirty-five percent in fire effectiveness.³⁸ This seemed to confirm the findings of the OCRSP and experience in the Vietnam War that machine guns should be assigned to the squad. Additionally, the machine gun used in the field testing, the Stoner 63A, was light enough to be handled by one soldier. It did not hinder the squad's maneuverability like the heavier M60 MG that required a crew of two to three to operate it. Unfortunately, it would not be until the mid-1980's that the Army would finally field a variation of this weapon, the M249 Squad Automatic Weapon (SAW). The study's alternate recommendation was to assign the M60 MG to each fire team as a replacement until a light machine gun could be fielded.

During its analysis, the IRUS carefully examined the issue of span of control. Its testing confirmed similar findings from earlier studies that the leader to follower ratio should not exceed one to five. It concluded that the squads with a leader and two sub-leaders, with each sub-leader controlling three to five men, were the most controllable. It also found that two sub-elements were easier to control than three. Its results differed little from the ASIRS in 1956 and the

OCRSP in 1961. During the field experiments, the evaluators found that the ROAD squad and the eleven men squad had the best span of control.³⁹

As part of its examination of the factors of control, IRUS experimented with the use of radios. It issued radios to all squad and fire team leaders and on a basis of one for every two soldiers. The evaluators determined that the radios did degrade the performance of the individuals wearing the radio sets but not to an unacceptable magnitude. They also decided that the radios were useful at all organizational levels; however, they were only essential in communication between squad and team leaders. The IRUS recommended that the Army provide transceiver capability down to team leader level.⁴⁰

In 1973 the Army acted on the IRUS recommendation and increased the size of the infantry squad to eleven men. It did not adopt the Stoner 63A machine gun, so the M16 rifle continued to serve as the weapon for the riflemen and automatic riflemen in the light infantry units. The squad in the mechanized infantry was organized with a driver, a gunner for the M2 50 caliber machine gun mounted on the APC, and a nine-men dismount element. This element was assigned a M60 MG, probably with the rationale that it would not hinder the mobility of a mechanized squad as it would a light infantry squad that had to move more by foot.⁴¹ The Army did not adopt the IRUS recommendation to field the M60 MG in the light infantry squad in lieu of the Stoner 63A MG. Instead, they kept them in the weapons squad of the platoon as they had been before.⁴²

To improve squad communication, the Army fielded the PRT-4A radio transmitter and the PRR-9 radio receiver which had to be used in conjunction to be a complete radio. The squad leader fielded both the PRT-4A and PRR-9 to have two way communications with the platoon leader and one-way communication with his team leaders. The fire team leader had only the PRR-9 to receive instructions from the squad leader. The equipment did not prove to be reliable and was phased out of the inventory during the mid-1980s.⁴³

After the Vietnam War, the Army became preoccupied with updating its fighting doctrine and modernizing its heavy divisions to meet the threat to NATO in western Europe. The political and military leaders were very concerned about the Soviet's rapid build-up of their missile, land, and sea forces and the lessons they drew about the highly destructive nature and rapid tempo of combat seen in the Yom Kipper War in 1973. From 1979 to 1980, the Army conducted the Division 86 study series to find the best organization to harness the new generation of weaponry and equipment that it would field in the eighties. As late as 1979, the Department of Defense planned to mechanize all the remaining infantry divisions except for one airborne division and one air assault division. However, 1979 marked the onset of the Iranian hostage crisis and the Soviet invasion of Afghanistan. Defense policy makers decided that there was a need for flexible contingency forces including rapidly deployable light infantry divisions. The Army stopped the mechanization of the active divisions at ten and sought to create a new

organization for the remaining four light infantry divisions. The transition from the ROAD division organization to Division 86 was slated to begin in 1983.⁴⁴

Division 86 brought radical change to the mechanized infantry squad. This was due to the introduction of the Bradley Infantry Fighting Vehicle (BFV). The BFV could transport only nine personnel. Because its weapons, the 25mm chain gun, TOW launcher, and 7.62mm coax machine gun, brought a new dimension of firepower to the infantry, the Army decided that the smaller squad would be suitable. The crew included a driver, a gunner, and the Bradley commander (BC) who was also the squad leader. During dismount operations, the squad leader would leave the BC position in the vehicle's turret and join the remaining six soldiers to form a seven-men dismounted element. The infantry later discovered through experience that it needed a third crew member to remain in the BC position at all times to control the vehicle. This reduced the dismounted element to six men. This arrangement turned out to be unsuitable, so the Army consolidated the three six-men dismounted elements in the platoon into two nine-men squads in 1988. These squads were organized and equipped just like the non-mechanized infantry squads. The platoon was now configured in a two-by-two organization with two sections of two vehicles each. Each section had one squad with a fire team in each vehicle.⁴⁵

The Division 86 study sought to bring a technological solution to the light infantry divisions that would give them the combat power necessary for modern war but still have a degree of strategic mobility that the heavy divisions lacked.

This led to the development of the motorized infantry structure. The 9th Infantry Division at Ft. Lewis, Washington became the test unit for the new concept.⁴⁶ The infantry squad remained at eleven men and was to be mounted on a light armored wheeled combat vehicle (LAWCV) which mounted an automatic cannon.⁴⁷

At the 1983 Army Commanders Conference, senior army leaders expressed concern that the Army had evolved into a "hollow" force. Their concerns centered on two areas. The first was that the reorganization under Division 86 had provided a sound flexible structure, but the Army could not resource all the personnel and material requirements for it. The other concern was that the forces had great mobility on the battlefield, but they lacked strategic mobility in deploying rapidly to the battlefield. The Army needed forces that could rapidly deploy worldwide to a crisis. These concerns drove the Army to conduct another study called the Army of Excellence (AOE) to find the best solution.⁴⁸

As a result of the AOE study, the Army shelved the motorized infantry organization and created the light infantry division that exists today. It also made the decision to create two new light infantry divisions. Because of the personnel constraints, the Army reduced all the non-mechanized infantry squads from eleven to nine men. Particularly noteworthy about this decision was that it was driven by resource constraints and not validated by any field tests. In fact, the Army has not conducted a comprehensive study of squad organization that included field testing since the IRUS in 1969.

In 1984, the Army began to implement the changes recommended by the Division 86 and AOE studies. The infantry squad now consists of nine men with two four-men fire teams. During this time, the squad fielded some new equipment that enhanced its combat power. It received the M249 Squad Automatic Weapon (SAW) to replace the M16 as the weapon of the automatic rifleman in each team. The SAW had double the range of the M16 and a sustained rate of fire of eighty-five rounds per minute compared to the M16's twenty-four. An improved squad radio, the AN/PRC-68, replaced the PRT-4A and the PRR-9, but the basis of issue did not go down to team leader level as was recommended in the IRUS report. The squad leader still does not have radio communication with his team leaders. Continuous improvement in night vision equipment has given the squad a significant capability to fight at night. Key leaders are equipped with night vision goggles that have a range between 150 to 300 meters. Night vision sights for weapons have a range between 400 to 600 meters.⁴⁹

The improved equipment has enhanced the combat power of the infantry squad and facilitated its reduction from eleven to nine men. However, the current organization has not been tested by a protracted war. It saw action in Panama in 1989, the Persian Gulf War in 1990-91, and Somalia in 1993. But in none of these conflicts did the Army sustain the type of losses that it did in previous wars, such as Vietnam, Korea, and World Wars I and II. Previous studies noted that the squad can expect to operate at an average of twenty-five percent reduced strength in the combat zone.

The current infantry squad as it has evolved since WWII is the product of lessons taken from combat experience, and the numerous studies conducted. It is organized into two fire teams, each with its own leader. This gives the squad the ability to maneuver independently from the platoon if necessary. Each fire team is organized and equipped to either quickly close with the enemy to destroy or capture him, or establish a base of fire to cover the other team's movement. This configuration has resulted from the trend towards decentralized operations which have been driven by the related trends of greater weapon lethality and increasing dispersion on the battlefield. The combat power of the squad has grown significantly over the years, but it still lacks an intra-squad communications capability that goes beyond voice and visual signals.

III. The Nature of Future Conflict

To organize and equip the infantry squad of the future properly, the Army must have a vision of what future conflict will be like. What type of threat is the Army likely to face in the coming years? No longer threatened by a monolithic superpower, the U.S. faces a strategic environment full of uncertainty. The type of conflict that may be seen in the future are wars on a smaller scale. Robert Kaplan predicts in his article, "The Coming Anarchy" that increasing cultural conflict will cause many of the nation-states to become weaker and less legitimate. This particularly applies to countries formed by the European colonialists who established borders with little regard to the demographics of the region.

The growing antagonism between cultures is exacerbated by the stress on the environment caused by exploding population growth and poor stewardship of resources. This has resulted in deforestation, soil erosion, water depletion, and air and water pollution. This in turn leads to increasing urbanization and mass migrations of people into increasingly crowded areas. The urban poverty spawns social destabilization which ignites the flames of conflict. In this day of modern communication, there is increasing global interaction that is causing greater cultural awareness. Kaplan predicts that wars in the future will be increasingly along cultural lines in the developing world where many of the states are multi-cultural and have weak, ineffective governments. Armed conflict will become more intrastate and unconventional.⁵⁰

In these types of wars, western forces may likely find themselves operating under U.N. supervision and will require a shift in strategy toward low intensity conflict. In a region like Bosnia, U.S. forces would be pitted against an adversary who maneuvers with small, elusive units over mountainous terrain. The U.S. would have to employ counterinsurgency tactics in this environment in which the enemy may be difficult to distinguish from the indigenous population.⁵¹ This would necessitate decentralized operations to hunt down the guerrillas and deny their freedom of action. The ability to engage the enemy with high technology weaponry from great distances will not be as useful. Instead, the U.S. will have to rely on soldiers with the capacity to assess and judge at the scene. They will be thrust into situations in which they will confront the dilemma between what is tactically

efficient and what is morally and politically correct. Their decisions and actions will likely be recorded by news cameras on the scene. With a world audience looking on, the action a soldier takes could have strategic ramifications. This type of scenario is not far fetched and argues for a higher leader to led ratio in the infantry force of the future.⁵²

With small scale regional wars the most likely scenario in the near future, the Army, nevertheless, must design in its forces the flexibility to fight in mid-to-high intensity conflict as well as low intensity conflict. The U.S. could face an enemy with technology equal to its own and who fields a modern, well-trained force. The trend towards greater lethality and greater dispersion on the battlefield that began last century will continue into the future. The high cost of modern technology will result in nations with smaller, more capable forces. This means the battlefield will be a mixture of linear and nonlinear combat and become increasingly nonlinear in the future. As improvements in command, control, communications, and intelligence (C3I) continue, future operations will be more fluid, continuous, and at a higher tempo than ever before. As the battle tempo increases, the window of opportunity will narrow. This will require decentralized operations in which leaders at the small unit level must act quickly and decisively. They must be able to mass rapidly to generate overwhelming combat power at the point of decision and then disburse before the enemy can target them. As the battlefield becomes more nonlinear, it will become even more important to detect the enemy early and attrite him at long ranges. However, the Army will still require

close combat to defeat the enemy regardless of whether it is low, mid, or high intensity.⁵³

IV. The Impact of Technology on the Future Infantry Squad

New technology will have a major impact on how the future infantry squad fights and will be important in determining how it should be organized. The Army is investing heavily in developing an integrated battlefield fighting system for the individual soldier. This system, called the 21st Century Land Warrior, will field improvements to the weapons, equipment, and clothing the soldier wears or carries in a tactical environment. It is scheduled to be field tested in 1998.

Land Warrior consists of five major subsystems. The Integrated Headgear Subsystem (IHS) will give each soldier intra-squad communications, hearing augmentation, an integrated night vision mobility sensor, and a high resolution display for sensor and computer output. This will give the soldiers the ability to talk to one another without having to be in voice or visual range. Leaders will be able to give orders without having to leave their position of cover or concealment and expose themselves to enemy fire. The Individual soldiers Computer/Radio (ISC/R) will provide semi-automated information ranging from global positioning system (GPS) information with digital maps and compass bearings to information in the form of messages, operation orders, and reports. This will enable leaders to navigate their units precisely even on the darkest night and always know their exact location. They will also know the exact location of other friendly units in the

area. In addition, this program will enable the soldier to accurately identify and send digitized call-for-fire information to artillery, mortars, and aircraft. The Weapon Interface Subsystem (WIS) will enable the soldier to view the weapon reticle on his headgear display. This will allow him to see and engage targets around vehicles, buildings, and obstructions without exposing himself to fire. A thermal weapon sight is being developed that will interface with the WIS that will allow the soldier to detect and engage targets more accurately through limited visibility and obscurants. The Microclimatic Conditioning (MCC) Subsystem is a light weight, backpack portable cooling system that will improve the soldier's performance in hot climates. The Survivability Subsystem will provide small arms ballistic protection of the torso, arms, and legs as well as signature reduction. It also has an advanced load-carrying capability that distributes the soldier's load for maximum comfort.⁵⁴

The Army is developing a new assault rifle that will replace all three of the infantry squad's current weapons, the M249 SAW, M16 rifle, and M203 grenade launcher. The new rifle, called the Objective Individual Combat Weapon (OICW), is expected to significantly increase the lethality of the individual soldier. It will incorporate a laser range finder, advanced ammunition, dual barrels, lightweight composite material, and computer-assisted aiming. The new ammunition will be fuse-timed high explosive rounds that burst in close proximity to the target. The soldiers will be able to hit targets behind walls or in foxholes by aiming over the suspected location. The burst type round will allow the soldier to be less precise in

his accuracy so he can engage targets faster. A working prototype of the weapon is expected to be tested from 1997 to 1999. The Army expects to field the weapon by 2004.⁵⁵

The new technology that will become available to the infantry squad provides some intriguing possibilities of how the squad will fight in the future. It will tremendously improve tactical movement. The preferred form of maneuver for light infantry is infiltration during periods of limited visibility. Ideally, the infantry do this by separating into small units that move on separate routes to avoid detection. However, units find it very difficult to coordinate this type of movement. Normally, companies will not separate below platoon level and will move on only one route so that no soldier gets misoriented or lost. The Land Warrior system would enable a company to separate down to fire team level and move on multiple routes. Each fire team could navigate precisely in limited visibility conditions (darkness, smoke, or fog) using the GPS. Leaders would be able to track their location and the other units on a digital map displayed on a heads up display in their headgear. They could also receive current information about the location of the enemy's positions and obstacles. This would enable them to move on the safest route to the objective and attack the enemy at his weakest point. The movement by fire teams on separate routes would enhance the security of the force by making them more difficult to detect and target.⁵⁶

Small unit leaders will have a great advantage in carrying out an assault of an enemy position by having a shared common picture of both the friendly and

enemy locations on their heads up display. The biggest problem in the assault is to cross the killing ground with minimal casualties. The key to success is to suppress the enemy with fires so that he cannot fire on the assault element. Land Warrior will enable infantrymen to target the enemy precisely with direct and indirect fires and to properly time the lifting of the fires. The squad leader equipped with a map, GPS, laser range finder, and compass will be able to call for any of the firepower of the U.S. armed forces provided he has priority.⁵⁷ He can suppress the enemy until the assault element reaches the objective before lifting the fire.

The infantry squad will also be able to exploit the new technology in the defense. Squad leaders can initiate and control fires easier with the intra-squad radio. Team leaders can assign sectors of fire using aiming lights and night vision image intensifiers. The leaders can produce automated range cards and sector sketches and digitally send them to the platoon leader to ensure the defense is coherent. That will be much faster and more accurate than the present practice of drawing these products by hand. Squad leaders will also be able to locate the alternate, supplementary, as well as subsequent positions in depth for the squad much quicker and more efficiently.⁵⁸

V. Concept for the Infantry Squad of the Future

The role of the infantry in future conflict will not change. Its primary role will still be that of the principal close combat force. The infantry must be organized, trained, and equipped to close with the enemy by means of fire and

maneuver to destroy or capture him or to repel his assault by fire or close combat. Another role that is gaining in importance is that of target-finder and designator/controller for precision systems. In the future, soldiers will be able to acquire, designate, and guide precision munitions directly onto the target. A third role that is becoming increasingly more common is that of security, control, and personnel resource for operations other than war (OOTW). The infantry is ideally suited to fulfill the need for soldiers to patrol city streets, to establish and operate checkpoints and roadblocks, and to search numerous buildings in small and large cities. Soldiers would also be needed for construction projects, feeding or guarding people, and handling equipment and supplies. Finally, their ability to provide a presence of stability in times of tension following war, disaster, and upheaval should not be overestimated.⁵⁹

The conditions of future conflict point to the need for an infantry force that can operate in smaller increments and can maneuver more effectively in close settings. The U.S. Army Infantry School proposed a new squad organization with a three-men fire team as the basic building block. It is made up of a leader with an M16 rifle, an automatic rifleman with a M249 SAW, and a grenadier with the M203 grenade launcher. The future assault rifle, the OICW, will replace all of these weapons when it is fielded next century. The fire team represents the most compact unit that can serve as a base of fire element or maneuver element. The infantry squad in this concept is ten men organized into three fire teams.

The three-team squad is not an original concept. The U.S. Marines developed a triangulized squad organization in WWII. The Marine infantry squad in 1941 was a corporal and nine men equipped with nine rifles and a BAR. It did not have fire teams. In August 1941, the 1st Marine Parachute Battalion was the first unit to organize squads into fire teams. At that time, the battalion was under strength in personnel but had a full allowance of weapons. Someone suggested that the rifle squads be equipped with three BARs from this pool of extra weapons. The decision was made to issue the BARs and to build three-men teams around each one. The new organization caught on and was soon adopted by the three other Marine Parachute battalions. The same organization was developed by Major Evans F. Carson in the Marine Raider battalions. Both Raider and Parachute units operated with the 3rd Marine Division in the Bourgainville Campaign in 1943 and used the new squad organization with good success.⁶⁰

In 1943, the Marines continued to search for the optimum squad organization for their conventional forces. They found that the old organization resulted in individual action that produced general confusion and the squad leader subsequently losing control. They experimented with the three-men teams used by the Raider and Parachute units and decided to adopt the organization. The Marines later increased the size of the fire team to four to offset the heavy attrition and to better distribute the ammunition carried for the BAR. In 1944, the Marine infantry squad consisted of thirteen men divided into three teams of four men each. Each

team had its own automatic weapon, the BAR.⁶¹ The marines have had so much success with this organization that they still use it today.

Other armies have also used the three-team squad organization. The Chinese Communist Army organized their infantry squads into three teams of three men as early as 1937. That was when it was noticed by Major Evans Carlton, USMC, during his six month sojourn with the Communist Army in north China. Carlton was so impressed with what he saw that he later adopted the three-by-three organization, adding a tenth man as squad leader, in the 2nd Raider Battalion in 1942. The Chinese felt that the three-by-three organization facilitated command and control and was useful for employing small groups for quick action with the provision for mutual support. The Chinese squad configuration was very effective in combat and drew praise from the highest echelons of command in the American Army in the Korean War.⁶²

The three-by-three infantry squad organization was also adopted by Vo Nguyen Giap in organizing his Vietnamese forces to defeat the French Army in Indochina. The Viet Cong used the same organization against the American Army in South Vietnam. In his study of the People's Army of Vietnam, Douglas Pike noted:

The unit at the bottom is not the individual soldier but the three person cell (to ba nguoi), sometimes called the glue-welded cell (to keo son) or the three participant cell (to tam gia). Three-the-trinity has always held a mystical appeal, and three as a military-operational unit is efficient; PAVN officers have found that three persons usually work together better than two or four.⁶³

During their counterinsurgency operations in Malaya and Borneo from 1948 to 1966, the British light infantry forces gained considerable experience in fighting an enemy using guerrilla tactics. To seize the initiative from the insurgents, they aggressively hunted them down in their jungle hideouts and ambushed them at trails and contact points. This required decentralization of command and control and maximum flexibility to fit the organization and tactics to the situation at hand. The squad organization often assumed a three-by-three grouping that adopted well for jungle fighting. The reconnaissance group consisted of a group leader and two scouts. The support group consisted of a group leader and two light machine gunners. The rifle group had a group leader and two riflemen. The British found that the groups increased the squad leader's ability to control his squad. The groups also gave the squad leader more options in combat. He could make contact and pin the enemy down with one team while maneuvering the other two teams. Or he could weight the fires of the team in contact with a second team and only maneuver the third team. The organization also trained potential junior leaders to take over the squad if necessary. The British found that three men per group worked well. When the squad was attrited, it would simply reorganize into two groups.⁶⁴

The only time the U.S. Army fielded an infantry squad with three teams was in WWII when it had the Able, Baker, and Charlie teams. However, these teams were different from the Marine fire teams and the fire teams that the Army

later adopted in 1956. The teams were not balanced and built around a heavy automatic weapon and did not have assigned team leaders.

In WWII, an Army unit experimented with a squad organization similar to the Marines. Captain James McIlmail, a rifle company commander in the 80th Infantry Division, noted that his squad leaders had difficulty controlling their squads. As a result, they were not fully exploiting the firepower of the squad, and there were too many casualties. After discussing the situation with his subordinate leaders, McIlmail reorganized the squad into four groups. The Able team consisting of two scouts and the Baker team consisting of the three-men BAR team remained the same. The Charlie team was split into two three-men teams of riflemen. The assistant squad leader controlled one team and the most experienced rifleman controlled the other. The squad leader controlled the Baker team. This organization decreased the span of control of the squad leader considerably. The new organization proved to be effective and helped reduce the casualties.⁶⁵ There is no indication that Captain McIlmail's revised squad organization was ever adopted anywhere in the Army outside his unit.

Since WWII, the Army has repeatedly examined and rejected the idea of adopting the Marine infantry squad organization. A 1954 Army staff study concluded that the three fire teams were too difficult for a squad leader to control, and that the four-men team was too small to sustain casualties and remain an effective unit.⁶⁶ The Army's most comprehensive study of squad organization, the IRUS, used the Marine squad organization as one of its test squads. However, it

did not equip this squad with any type of heavy automatic weapon. It only issued the Stoner 63A machine gun to squads with fire teams of at least five men.⁶⁷ Not surprisingly, the Marine squad organization did poorly compared to the others equipped with the Stoner 63A.⁶⁸ The IRUS report itself acknowledged that every fire team should include a light machine gun.⁶⁹ However, the Infantry School's current proposal of a ten-men infantry squad consisting of three three-men fire teams is almost identical to the squad organization used successfully by the Marine Raider and Parachute battalions in WWII.

VI. Comparison of the Proposed and Present Squad Organizations

Given the lessons from the past, the type of warfare anticipated in the future, and the emerging technology, what is the optimum infantry squad organization? The Army's proposed ten-men squad with three fire teams will be compared to its present configuration of nine men with two fire teams using criteria adopted from the elements of combat power outlined in FM 100-5 Operations. The criteria are firepower, maneuver, leadership, protection, and resiliency. The definitions of the criteria are refined to suit a proper comparison of the two squad organizations.

Firepower

Firepower is the ability to suppress or destroy the enemy with fires measured by volume, accuracy, range, and responsiveness. The proposed squad

has the advantage in firepower with an additional M249 SAW and M203 grenade launcher. With an additional leader, fires are better controlled and more effective. With the future assault rifle (OICW), the difference in firepower between the two would not be as pronounced. But the proposed squad would still have the advantage with one extra soldier and more leaders.

Maneuver

Maneuver is the ability to move quickly to close with the enemy while under fire. The proposed squad has more options for maneuver than the present squad. The present squad can only fix the enemy with one team and maneuver to the left or right flank with the other. The proposed squad can use its third team to maneuver against the enemy from a second direction or move behind the other team as an exploitation element for further penetration of the objective. The future Land Warrior technology would give the proposed squad an even greater advantage over the present squad because the squad leader will have better control over his teams.

Leadership

Leadership is the ability of the leader to communicate and impose his will upon the members of his unit so that they respond in a tactically appropriate and coordinated way. At the squad leader level, the present squad with two teams has the advantage with a smaller span of control than the proposed squad with three

teams. At the team leader level, the proposed squad with three-men teams has the advantage of a smaller span of control over the present squad with four-men teams. The overall advantage goes to the proposed squad because it has the higher leader-to-led ratio. This factor gains greater importance as operations become more decentralized and faster paced. In the future, the Land Warrior technology with its intra-squad communication and situation awareness capability will significantly ease the burden of controlling three fire teams.

Protection

Protection is the ability to employ tactics, techniques, and procedures to minimize the enemy's ability to detect and strike the unit. The proposed squad has the advantage over the present squad because it can disperse more. The teams are smaller which makes them more difficult to detect and target. In the future, the Land Warrior technology will enable the proposed squad to disperse its teams even further without the concern of losing control or a team getting mis-oriented. The proposed squad's greater firepower would enable it to protect itself better than the present squad.

Resiliency

Resiliency is the ability to function as a fighting unit despite the loss of personnel. Some would argue that the bigger fire teams make the present squad more resilient than the proposed squad. They base this on the premise that a fire

team must have at least three members to exist and the historical lesson that squads in combat operate at an average strength of seventy-five percent. The OCRSP study in 1961 and a survey of Vietnam veterans in 1967 both indicated that fire teams ceased to exist when the squad was reduced to seven or eight men. If the premise proved to be true, then the proposed squad would be forced to reorganize as soon as it lost one person. This data is relatively old and squad weapons and equipment have improved since then. There is no recent data to say whether two soldiers could fight effectively as a fire team for a limited time. The Land Warrior technology of the future will give the individual soldier so much more capability that they could probably fight in a two-men team if necessary. The test of resiliency does not necessarily rest on how soon a squad would have to reorganize after it took losses. Reorganization in a squad is not as big of an issue as it would be in larger size unit. The men in a squad are familiar enough with one another that they could easily work together in different combinations without any significant loss in efficiency. Therefore, the proposed squad would be more resilient than the present squad because it has more men.

VII. Conclusion

The proposed ten-men squad with three fire teams appears to be superior to the present nine-men squad with two fire teams in all criteria. It incorporates the lessons of the past and exploits the trends of the future as well. Since the 19th century, the battlefield has become increasingly dispersed as weapons have become

more lethal. This has led to the steady trend of greater decentralization of command and control that continues today. The trend of dispersion on the battlefield can only go so far. The human factor of war requires soldiers to be in close proximity to one another to sustain their courage. Soldiers fight best when they are grouped with other soldiers they know and trust. The basic building block of three-men teams establishes the necessary moral cohesion while also facilitating the need for units to disperse to survive.

A squad leader should be able to control three teams in combat even with the present technology fielded. The U.S. Marines have effectively used triangular squads in every conflict since WWII. Other countries, such as China, Vietnam, and Great Britain have successfully used this organization in the past. The Army could facilitate team control by fielding an intra-squad radio as soon as possible to fill a need that was identified by the IRUS report in 1969.

The proposed squad should have the necessary resiliency in a protracted conflict. The Marine Raider and Parachute battalions in WWII fought effectively with the same organization. The nature of their missions called for them to operate behind enemy lines and to use hit and run type tactics. Consequently, they were not attrited as heavily as the conventional Marine units. The heavy attrition caused the Marines to adopt a more robust squad of twelve men organized into three fire teams of four. The future battlefield calls for units to avoid "head-to-head" attrition warfare. The ability to acquire information about the enemy and to distribute it quickly has dramatically increased. This means that a ground combat force can be

detected and attacked well before it gets within direct fire range. In the Persian Gulf War, the Iraqi forces were heavily attrited before the coalition forces launched their ground attack.

The arguments in favor of the proposed squad organization can only go so far without hard evidence. The Army has not conducted a comprehensive field test of infantry squad organization since the Vietnam War. Because of the limited nature of the conflicts the Army has participated in since then, it would be dangerous to draw too many conclusions from them. The Army needs to test its proposed organization in the field under simulated combat conditions to determine how well it will work.

ENDNOTES

- ¹ United States Army Infantry School, Holistic Review of the Infantry (HRI), (Ft. Benning, GA.: Combined Arms Training and Doctrine Department, 1994), pp. 3-4.
- ² John Weeks, "The Modern Infantryman," Military Technology and Economics, (May-June 1979), pp. 23-24.
- ³ Department of the Army, FM 100-5 Operations, (Washington D.C. : Government Printing Office, 1993), p. 2-10.
- ⁴ James J. Schneider, "The Theory of the Empty Battlefield," JRUSI, (September 1987), pp. 38-40.
- ⁵ Ibid., pp. 38-40.
- ⁶ S.L.A. Marshall, Men Against Fire, (Gloucester, MA.: Peter Smith, 1978), p. 42.
- ⁷ John A. English, On Infantry, (New York: Praeger, 1984), pp. 21-23.
- ⁸ Ibid., pp. 21-23.
- ⁹ Virgil Ney, Organization and Equipment of the Infantry Rifle Squad: From Valley Forge to R.O.A.D., (Ft. Belvoir, VA.: United States Army Combat Developments Command, 1965), pp. 32-33, 43.
- ¹⁰ Department of the Army, FM 7-10 Rifle Company, Rifle Regiment, (Washington D.C.: Government Printing Office, 1944), p. 130.
- ¹¹ James M. Gibson, "Rifled Squads Tailored for Teamwork," Army, (May 1956), pp. 33-34.
- ¹² The Infantry Conference, Report of Committee "B" on Tactics and Techniques, (Ft. Benning, GA.: The U.S. Army Infantry School, 1946), pp. 5-6.
- ¹³ Robert Dupree and Horace Homesly, Jr., History of United States Army Squads and Platoons, 1935-1967, (Ft. Benning, GA.: Combat Developments Command Infantry Agency, 1967), p. 37.
- ¹⁴ S.L.A. Marshall, Commentary on Infantry Operations and Weapons Usage in Korea, (London: Greenhill Books, 1988), pp. 53-56.
- ¹⁵ Dupree, p. 51.

- ¹⁶ John A. Whittenburg, et. al., A Study of the Infantry Rifle Squad TOE (ASIRS), (Ft. Monroe, VA.: HQ, Continental Army Command, 1956), pp. 68-71.
- ¹⁷ ASIRS, P. 74.
- ¹⁸ Dupree, p. 67.
- ¹⁹ Infantry Rifle Company, TOE 7-17C (Washington D.C.: Department of the Army, 13 June 1956).
- ²⁰ This quotation was taken from the cover letter to this study; Ranger Department, Organization of the Rifle Squad, (Ft. Benning, GA.: U.S. Army Infantry School, 1960).
- ²¹ Marvin L. Worley, A Digest of New Developments in Army Weapons, Tactics, Organization, and Equipment, (Harrisburg, PA.: Military Service Publishing Co., 1958), p. 34.
- ²² James M. Vandiver, "The M79 Grenade Launchers," Armor, (September-October 1961), p. 29.
- ²³ Dupree, p.74.
- ²⁴ U.S. Army Combat Developments Command, Optimum Composition of the Rifle Squad and Platoon, (OCRSP), (Ft. Ord, CA.: Combat Developments Command, 1961), p. 36.
- ²⁵ Department of the Army, FM 23-67 Machine Gun 7.62-MM, M60, (Washington D.C.: Government Printing Office, 1984), pp. 1-3, 1-4.
- ²⁶ OCRSP, p. 18.
- ²⁷ Ibid., p. 19.
- ²⁸ Ibid., p. 20.
- ²⁹ United States Army Infantry School, Rifle Squad and Platoon Evaluation Program, (RSPEP), (Ft. Benning, GA.: Office of the Chief Evaluator, 1961), p. 26.
- ³⁰ Ibid., p. 22.
- ³¹ Ney, p. 66.
- ³² Dupree, p.86.

³³ T. A. Williams, Small Unit Combat Experience, Vietnam 1966-1967, (Ft. Benning, Ga.: U.S. Army Combat Development Command, 1967), pp. 15-17.

³⁴ U.S. Army Combat Developments Command, Infantry Rifle Unit Study, IRUS-75, phase 2, vol. I, IV, V (Ft. Benning, GA.: Combat Developments Command, 1969).

³⁵ Robert J. O'Neil, "IRUS," Infantry, (January-February, 1972), p. 24.

³⁶ IRUS, p. 17.

³⁷ Ibid., p. 36.

³⁸ Ibid., pp. 33-34, N-3. Fire effectiveness was determined from the number of red casualties inflicted and the ratio of red casualties per the initial blue squad strength for each mission.

³⁹ Ibid., pp. O-18, O-I-1, O-I-2

⁴⁰ Ibid., p. O-I-2

⁴¹ Department of the Army, FM 7-7 The Mechanized Infantry Platoon and Squad, (Washington D.C.: Government Printing Office, 1977), pp. 2-3.

⁴² U.S. Army Infantry School, Infantry Reference Tactics Data, (Washington D.C.: Government Printing Office, 1983), pp. 25, 29.

⁴³ My platoon had the PRT-4A and PRR-9 radios when I was a platoon leader in the 82nd Airborne Division in 1982. My NCO's had such little confidence in them, that we never used them in the field. To my knowledge, none of the other platoons in the battalion used them either.

⁴⁴ John L. Romjue, A History of Army 86, Volume II The Development of the Light Division, the Corps, and Echelons above Corps, (Ft. Monroe, VA.: U.S. Army Training and Doctrine Command Historical Office, 1982), p. 25.

⁴⁵ U.S. Army Infantry School White Paper, BFV Doctrine/Organization, p. 14.

⁴⁶ Romjue, p. 55.

⁴⁷ Ibid., p. 51.

- ⁴⁸ Department of the Army, FC 100-1 The Army of Excellence, (Ft. Leavenworth, KS.: U.S. Army Combined Arms Combat Development Activity, 1984), p. 1-3.
- ⁴⁹ U.S. Army Infantry School, SH 7-8 Infantry Rifle Platoon and Squad, (Ft. Benning, GA.: Combined Arms Training and Doctrine Department, 1991), p. L-8.
- ⁵⁰ Robert D. Kaplan, "The Coming Anarchy", The Atlantic Monthly, (February 1994), pp. 44-76.
- ⁵¹ Francis Tusa, "Is the West Ready for the Wars of the Nineties?", Armed Forces Journal International, (July 1993), pp. 39-40.
- ⁵² HRI, pp. 5-7.
- ⁵³ This perspective of the modern battlefield was taken from Christopher Tucker, Major USA, "The Mechanized Infantry Battalion: Is Change Necessary?", (SAMS Monograph, Command and General Staff College, 1991), pp. 5-7. See also Stephen Silvasy, Major General, USA, "Airland Battle Future: The Tactical Battlefield", Military Review, 71 (February 1991), p.3.
- ⁵⁴ Gregory J. Dyekman, Captain, USA, "The 21st Century Land Warrior", Infantry, (July-August 1994), pp. 13-14.
- ⁵⁵ Jon R. Anderson, "Sci-fi Features Highlight New Assault Rifle", Army Times, (October 24, 1994), p. 36.
- ⁵⁶ Dyekman, pp. 12-14.
- ⁵⁷ HRI, p. 14.
- ⁵⁸ Mark A. Conley, Captain, USA, "Enhanced Land Warrior Program", Infantry, (March-April 1994), p. 21.
- ⁵⁹ HRI, pp. 8-9, 15-16.
- ⁶⁰ L. M. Holmes, 2nd Lieutenant, USMC, "Birth of the Fire Team", Marine Corps Gazette, (November 1952), p. 22.
- ⁶¹ Benis M. Frank and Henry I. Shaw, Jr., Victory and Occupation, History of the U.S. Marine Corps Operations in WWII, Vol V, (Washington: Historical Branch, G-3 Division, Headquarters, U.S. Marine Corps, 1968), pp.698-701.

- ⁶² Alexander L. George, The Chinese Communist Army in Action: The Korean War and its Aftermath, (New York: Columbia University Press, 1967), pp. 51-53.
- ⁶³ Douglas Pike, PAVN: People's Army of Vietnam, (Novato, CA.: Presidio Press, 1986), p. 98.
- ⁶⁴ Scott R. McMichael, A Historical Perspective on Light Infantry, (Ft. Leavenworth, KS.: Combat Studies Institute, 1987), pp. 104-105, 108-110.
- ⁶⁵ U.S. Army Service Forces Technical Intelligence Report, Subject: Battle Tested Infantry Squad Formation, (Washington D.C., 31 March 1945), p. 2-4.
- ⁶⁶ James M. Gibson, Major, USA, Staff Study, Subject: Organization of the Rifle Squad, (Ft. Benning, GA.: Tactical Department, The Infantry School, 15 February 1954), pp. 12,14.
- ⁶⁷ IRUS, pp. O-I-1,2.
- ⁶⁸ Ibid., pp. 15-17.
- ⁶⁹ Ibid., pp. 29,53.

BIBLIOGRAPHY

Official U.S. Army Studies and Reports

- Dupree, Robert, and Horace Homesley, Jr. A History of United States Army Squads and Platoons, 1935-1967. Ft. Benning, GA.: United States Army Combat Developments Command, 1967.
- Gibson, James M. Staff Study, Subject: Organization of the Rifle Squad. Ft. Benning, GA.: Tactical Department, The U.S. Army Infantry School, 1954.
- Havron, Dean M. et. al. A Research Study of Infantry Rifle Squad TOE. Ft. Monroe, VA.: Headquarters, Continental Army Command, 1956.
- Ney, Virgil. Organization and Equipment of the Infantry Rifle Squad: From Valley Forge to R.O.A.D.. Ft. Belvoir, VA.: United States Army Combat Developments Command, 1965.
- Ranger Department. Organization of the Rifle Squad. Ft. Benning, GA.: United States Army Infantry School, 1960.
- Romjue, John L. A History of Army 86, Volume II The Development of the Light Division, the Corps, and Echelons above Corps. Ft. Monroe, VA.: U.S. Army Training and Doctrine Command Historical Office, 1982.
- The Infantry Conference. Report of Committee 'B' on Tactics and Techniques. Ft. Benning, GA.: United States Army Infantry School, 1946.
- United States Army Combat Developments Command. Infantry Rifle Unit Study, IRUS-75, Phase 2, Vol. I, IV, V. Ft. Benning, GA.: Combat Developments Command, 1969.
- United States Army Combat Developments Command. Optimum Composition of the Rifle Squad and Platoon. Ft. Ord, CA.: Combat Developments Command, 1961.
- United States Army Infantry School. Holistic Review of the Infantry. Ft. Benning, GA.: Combined Arms Training and Doctrine Department, 1994.
- _____. Rifle Squad and Platoon Evaluation Program. Ft. Benning, GA.: Office of the Chief Evaluator, 1961.
- _____. White Paper, BFV Doctrine/Organization. Ft. Benning, GA.: U.S. Army Infantry School, 1988.

U.S. Army Service Forces Technical Intelligence Report. Subject: Battle Tested Infantry Squad Formation. Washington D.C.: Army Service Forces, 1945.

Whittenberg, John A. et. al. A Study of the Infantry Rifle Squad TOE. Ft. Monroe, VA.: U.S. Army Continental Command, 1956.

Williams, T. A., and Horace E. Homesley Jr. Small Unit Combat Experience Vietnam, 1966-1967. Ft. Benning, GA.: U.S. Army Combat Developments Command, 1967.

Field Manuals

Department of the Army. FC 100-1 The Army of Excellence. Ft. Leavenworth, KS.: U.S. Army Combined Arms Combat Development Activity, 1984.

_____. FM 7-8 Infantry Rifle Platoon and Squad. Washington D.C.: Government Printing Office, 1992.

_____. FM 23-67 Machine Gun 7.62-MM, M60. Washington D.C.: Government Printing Office, 1984.

_____. FM 7-10 Rifle Company, Rifle Regiment. Washington D.C.: Government Printing Office, 1944.

_____. FM 23-14 Squad Automatic Weapon (SAW) M249. Washington D.C.: Government Printing Office, 1985.

Published Articles

Anderson, Jon R. "Sci-fi Features Highlight New Assault Rifle." Army Times. October 24, 1994. 36.

Dyekman, Gregory J., Captain, USA. "The 21st Century Land Warrior." Infantry. July-August 1994. 12-14.

Gibson, James M. "Rifled Squads Tailored for Teamwork." Army. May 1956. 33-34.

Kaplan, Robert D. "The Coming Anarchy." The Atlantic Monthly. February 1994. 44-76.

O'Neil, Robert J. "IRUS." Infantry. January-February 1972. 22-26.

Schneider, James J. "The Theory of the Empty Battlefield." JRUSI. September 1987. 37-44.

Silvasy, Stephen. Major General. USA. "Airland Battle Future: The Tactical Battlefield." Military Review. 2-12.

Tusa, Francis. "Is the West Ready for the Wars of the Nineties?" Armed Forces Journal International. July 1993. 39-40.

Vandiver, James M. "The M79 Grenade Launchers." Armor. September-October 1961. 29.

Weeks, John. "The Modern Infantryman." Military Technology and Economics. May-June 1979. 23-26.

Books

English, John A. On Infantry. New York: Praeger, 1984.

Frank, Benis M. and Henry I. Shaw, Jr. Victory and Occupation, History of the U.S. Marine Corps Operations in WWII. Washington D.C.: Historical Branch, G-3 Division, Headquarters, U.S. Marine Corps, 1968.

George, Alexander L. The Chinese Communist Army in Action: The Korean War and its Aftermath. New York: Columbia University Press, 1967.

Marshall, S.L.A. Commentary on Infantry Operations and Weapons Usage in Korea. London: Greenhill Books, 1988.

_____. Men Against Fire. Gloucester, MA.: Peter Smith, 1978

Pike, Douglas. PAVN: People's Army of Vietnam. Novato, Ca.: Presidio Press, 1986.

Worley, Marvin L. A Digest of New Developments in Army Weapons, Tactics, Organization, and Equipment. Harrisburg, PA.: Military Service Publishing Co., 1958.

Monographs

Melody, Paul E. Major, USA. "The Infantry Rifle Squad: Size is Not the Only Problem." SAMS Monograph, Command and General Staff College, 1990.

Tucker, Christopher. Major, USA. "The Mechanized Infantry Battalion: Is Change Necessary?" SAMS Monograph, Command and General Staff College, 1991.